S5 B Test, June 2024

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MATHEMATICS 4 PERIODS

PART B

DATE : 17 June 2024

Name : _____

Class : _____

Score : _____ / 35

DURATION OF TEST :

45 minutes : 14h30 - 15h15

AUTHORIZED MATÉRIAL :

Examination with technological tool: Calculator Casio Graph 90+E, Numworks or TI-83 Premium CE Python in exam mode.
Pencil

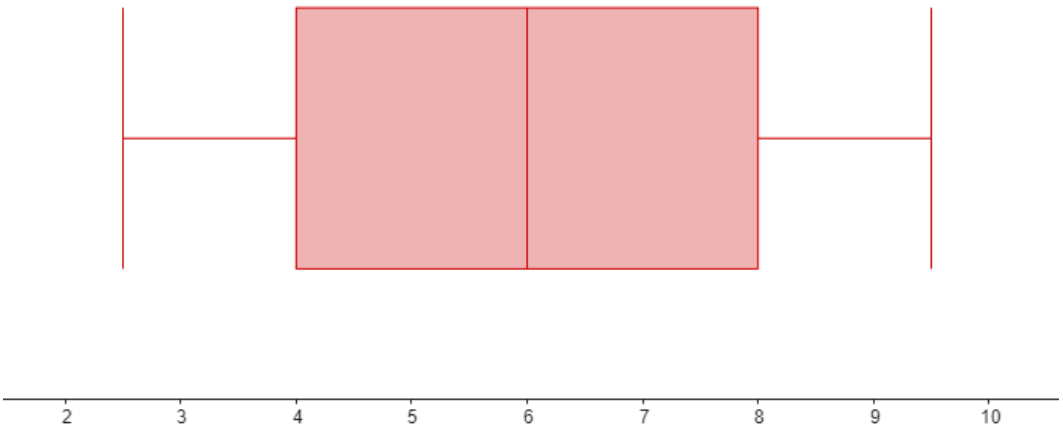
Ruler

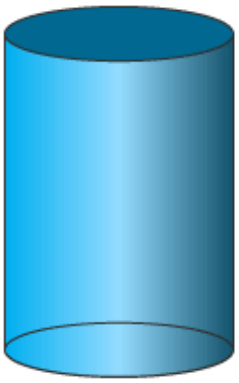
REMARQUES PARTICULIERES :

- The subject includes 3 compulsory exercises.
- The answers must be accompanied by the explanations necessary for their elaboration.
- Full points cannot be awarded for a correct answer in the absence of the reasoning and explanations that lead to this answer.

Stay calm and focused.
Good job and good luck.

Exercice B1	**Marks**
Value of a house in one of the European capitals can be described using a model $$V(t) = 425\,000 \cdot 1.025^t$$ where t is the number of years since it was purchased by it's current owner, Mr. Anderson, and $V(t)$ is expressed in euros.	
1) **Determine** how much did Mr. Anderson pay for this house.	**1 p**
2) **Calculate** what the house will be worth 6 years after it was purchased by Mr. Anderson (rounded to two decimals)	**2 p**
3) **Calculate** what the house will be worth 18 **months** after it was purchased by Mr. Anderson (rounded to two decimals).	**3 p**
4) **Calculate** how many years after the purchase by Mr. Anderson, the value of the house will exceed 600 000 euro.	**4 p**
Mr. Johnson has just bought a house in different European capital for 350,000 euro. The value of houses in this city increases by 7% per year.	
5) **Calculate** what will the value of the house be in 5 years.	**4 p**

Exercice B2	**Marks**
A teacher wants to analyze the performance of two classes (Class A and Class B) in a recent math exam. The exam scores for class A are recorded as follows: Class A: $\{3,4,5,5,6,6.5,7,7,7,8.5,9,10\}$	
1) **Calculate** the mean and interpret it.	**2 p**
2) **Give** the standard deviation and interpret it.	**2 p**
3) **Draw** a boxplot of the data set.	**4 p**
The teacher accidently deleted the exam scores for class B and just has the Boxplot, that he plotted of the scores, left. The Boxplot looks like this:  	
4) **Compare** the two boxplots and describe what it means for the results of the two different classes. **Give** at least two important conclusions	**3 p**

Exercice B3	**Marks**
Imagine you're an engineer tasked with designing a water storage system for a remote village. You decide to construct a cylindrical water tank. It has a radius of 3 meters and a height of 8 meters. 	
1) **Calculate** the total surface area of the cylindrical tank, including the curved surface and the two circular bases, to determine the amount of material needed for construction.	**5 p**
2) The formula for the volume of a cylinder is $V = Base\ area \cdot Hight$ **Determine** how many liters of water are there in the cylindrical tank if it's fill up to $3/4$ of its Hight.$(1\ \text{liter} = 1\ \text{dm}^3)$	**5 p**

END OF THE EXAMINATION